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Uranium Mill Tailings

Uranium mill tailings are primarily the sandy process waste material from a conventional uranium mill. This ore residue contains the radioactive decay products from the uranium chains (mainly the U-238 chain) and heavy metals. As defined in Title 10, Part 40, of the *Code of Federal Regulations* (10 CFR Part 40), the tailings or wastes produced by the extraction or concentration of uranium or thorium from any ore processed primarily for its source material content is byproduct material. This includes discrete surface waste resulting from uranium solution extraction processes, such as in situ recovery, heap leach, and ion-exchange. Byproduct material does not include underground ore bodies depleted by solution extraction. The wastes from these solution extraction facilities are transported to a mill tailings impoundment for disposal.

Most of the regulations that the U.S. Nuclear Regulatory Commission (NRC) has established for this type of byproduct material are found in 10 CFR Part 40, Appendix A, "Criteria Relating to the Operation of Uranium Mills and the Disposition of Tailings or Wastes Produced by the Extraction or Concentration of Source Material from Ores Processed Primarily for Their Source Material Content." In particular, the criteria in Appendix A cover the siting and design of tailings impoundments, disposal of tailings or wastes, decommissioning of land and structures, groundwater protection standards, testing of the radon emission rate from the impoundment cover, monitoring programs, airborne effluent and offsite exposure limits, inspection of retention systems, financial surety requirements for decommissioning and long-term surveillance and control of the tailings impoundment, and eventual government ownership of the tailings site under an NRC general license.

Regulation of mill tailings is covered under the Nuclear Materials program. See Uranium Recovery and the Backgrounder on Uranium Mill Tailings.

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